Pediatric isolated bilateral iliac aneurysm

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Aneurysms are rare in children. Isolated iliac artery aneurysms are very rare, especially bilateral aneurysms. Pediatric aneurysms are usually secondary to connective tissue disorders, arteritis, or mycotic causes. We present a case of a 3-year-old child with bilateral idiopathic common iliac aneurysms that were successfully repaired with autogenous vein grafts. (J Vasc Surg 2013;58:215-6.)

Isolated common iliac artery aneurysms occur infrequently and are especially rare in the pediatric population. A solitary iliac artery aneurysm is defined as an aneurysm of the iliac artery without a coexisting aneurysm at another location.[1] The common causes are congenital, traumatic, inflammatory, and infectious. Symptoms do not occur unless the aneurysm is large enough to compress the adjoining structures. A large aneurysm has a significant risk of rupture and high morbidity and mortality. We report a case of idiopathic bilateral common iliac artery aneurysms in a 3-year-old child.

CASE REPORT

A 3-year-old boy born of a nonconsanguineous marriage, with normal milestones, was admitted with complaints of abdominal pain for 3 months' duration. Pain was on and off, not related to food intake, and sometimes associated with vomiting. No loss of weight, loss of appetite, or fever was present to suggest inflammation or infection.

On admission the child was active for his age. General examination was normal. Abdominal examination revealed two separate pulsatile masses in the umbilical region that were nontender. There was no abdominal bruit, and all peripheral pulses were normal. The abdominal duplex scan revealed two large, well-defined, thick-walled pulsatile lesions with mural calcifications and turbulent internal flow at the origin of both common iliac arteries. A computed tomography angiogram confirmed the presence of bilateral common iliac artery aneurysms and ruled out any other aneurysm in the rest of the arterial tree (Fig 1).

Routine blood investigations revealed no abnormality. Blood culture was positive for *Klebsiella pneumonia* and sensitive to ofloxacin and amikacin. Evaluation by rheumatology, cardiology, and otorhinolaryngology revealed no abnormalities. He was given preoperative antibiotics for 14 days, and the result of the repeat blood culture was negative.

Preoperative assessment. A preoperative ultrasound examination was done on both lower limbs for mapping and measuring the bilateral femoral veins. The femoral veins were ~4 mm in diameter, and no anatomic abnormalities were detected in the lower limb venous system.

Procedure. An infraumbilical transverse incision was used to open the lower abdomen. Through a transperitoneal approach, two separate aneurysms involving both common iliac arteries (right, 30 mm; and left, 25 mm) were identified. The left femoral vein was harvested through a linear thigh incision and dilated with heparinized saline. Bilateral repair of the iliac artery aneurysms was accomplished using interrupted, nonabsorbable 7-0 monofilament sutures to anastomose the reversed femoral veins[2] (Fig 2). The left internal iliac artery arose from the aneurysm sac and could not be salvaged. The right internal iliac artery circulation was preserved. No edema developed in the left lower limb, and the patient had an uneventful postoperative period.

Postoperative follow-up. The histopathologic examination of the aneurysm sac revealed features of a true aneurysm with calcification and no evidence of vasculitis. Microbiologic culture of the sac was negative for bacteria. A postoperative duplex scan of the left lower limb venous system showed patent common femoral, popliteal, and great saphenous veins. The child was re-examined with a duplex scan at 15 days and at the end of the first and third months, revealing the anastomoses to be patent bilaterally.

DISCUSSION

To our knowledge, this is the first case report of bilateral iliac artery aneurysms without involvement of the aorta in a pediatric patient. Having the similar pathologic profile of abdominal aorta, iliac artery aneurysms usually develop synchronously or metachronously with an infrarenal abdominal aortic aneurysm in ~10% to 20% of cases.[3] However, the estimated prevalence of isolated iliac artery aneurysms is much lower, at ~0.008% to 0.03%, on the basis of autopsy series.[4] One-third of iliac artery aneurysms are bilateral. Because of their rarity, no estimate exists on the prevalence of such aneurysms in the pediatric population.

Aneurysms in children may be due to a defect in collagen synthesis, such as Ehlers-Danlos syndrome, inflammatory

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Author conflict of interest: none.

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0741-5214/$36.00

http://dx.doi.org/10.1016/j.jvs.2012.11.036

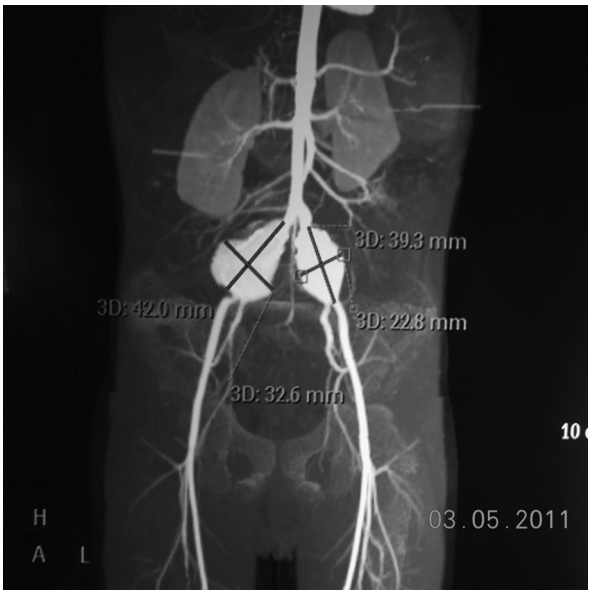

Fig 1. A preoperative computed tomography angiogram shows aneurysmal dilatation of both common iliac arteries.

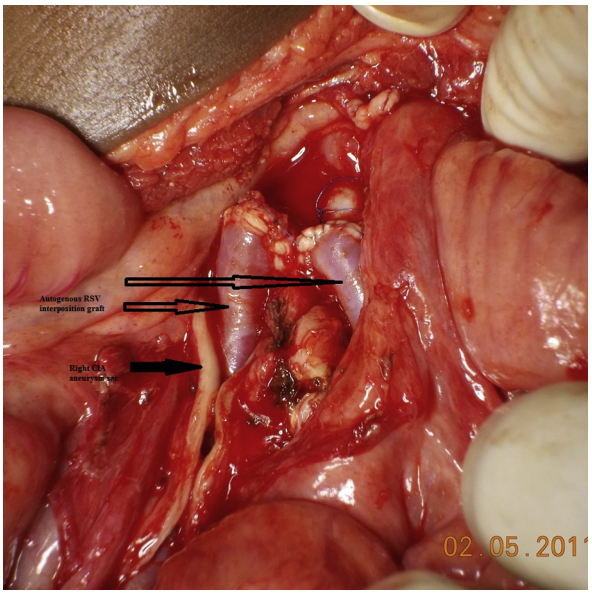

Fig 2. A perioperative photograph shows the bilateral femoral vein interposition graft at common iliac arteries.

causes that include Kawasaki disease, polyarteritis nodosa, Takayasu disease, sarcoidosis, and infections. Rarely is no cause identified. Only 13 cases of idiopathic pediatric aneurysms have been reported to date, among which is only a single case of an aneurysm involving the iliac artery, and none have been bilateral and isolated.[2,5]

Because isolated common iliac artery aneurysms are rare, there is no consensus regarding their management. The primary treatment of choice is open surgical repair with an interposition graft, but reports on endovascular repair of solitary iliac artery aneurysms describe good medium-term results.[6] It is difficult to decide on the exact size of aneurysm that warrants intervention.[7] We recommend that surgical intervention may be considered when the size of the aneurysm is more than three times the normal adjacent artery size.

Certain aspects to be considered in the management of pediatric aneurysm are the approach, the conduit, the suture material, and the method of anastomosis. A number of excellent open aortic surgeons find the transverse approach preferable to the midline incision, considering the young age, postoperative pain, and cosmetic results.

The choice of conduit is a matter of concern. We prefer autogenous graft, considering the size mismatch that will happen in due course with the use of synthetic graft as the child grows. The anastomosis is performed with interrupted sutures to prevent "purse-stringing" from the permanent suture as the child and arteries grow. While selecting the autogenous vein, the size mismatch must be considered, and we prefer the femoral vein rather than the great saphenous vein. The complications of removing the femoral veins, such as distal venous edema and later development of venous hypertension, must be managed prophylactically by compression stockings.

Long-term regular surveillance must be performed in these patients to discover any subsequent development of connective tissue disorders or metachronous aneurysms and to monitor the long-term integrity of the graft.

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Submitted Sep 8, 2012; accepted Nov 1, 2012.